REMARKS

This paper is being provided in response to the Final Office Action dated January 25, 2008, for the above-referenced application and accompanies a Request for Continued Examination (RCE) filed herewith. In this response, Applicants have amended claims 3, 4, 6-15, 18, 19 and added new claims 27-40, as discussed below, to clarify that which Applicants consider to be the presently-claimed invention. Applicants respectfully submit that the amendments to the claims and the new claims are fully supported by the originally-filed specification and request consideration of the following remarks.

The rejection of claims 3, 4, 14, 17 and 19-22 under 35 U.S.C. 103(a) as being anticipated by Balendonck, et al., "Application of an Intelligent Dielectric Sensor for Soil Water Content, Electrical Conductivity and Temperature," IEEE, pp. 1817-1822, 2001, (hereinafter "Balendonck" and referred to in the Office Action as "Blendonck") in view of U.S. Patent No. 6,320,393 to Yasui (hereinafter "Yasui") and the rejection of claims 6-13, 15 and 18 under 35 U.S.C. 103(a) as being unpatentable over Balendonck are all hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

Independent claim 3, as amended herein, recites a measuring system for determining a property of an oil from a dielectric property of the oil including a first sensor for measuring an electric capacitance and a second sensor for measuring a temperature. The first sensor is designed as a dielectric sensor which is immersed in the oil and has a stray-field capacitor which functions as the measuring capacitor, and the second sensor is designed as a temperature sensor

which is immersed in the oil. The first and second sensors are each connected to an analyzer device which assigns a value of the property to be determined to a measured temperature value and a measured electric capacitance value. The property to be determined includes an ageing state of the oil. The value of the electric capacitance measured by the dielectric sensor is compared in a comparator device of the analyzer device with a stored reference value assigned to the measured temperature value, and a signal is output as a function of whether the reference value is reached or exceeded.

Independent claim 4, as amended herein, recites a measuring system for determining a property of an oil from a dielectric property of the oil including a first sensor for measuring an electric capacitance and a second sensor for measuring a temperature. The first sensor is designed as a dielectric sensor which is immersed in the oil and has a stray-field capacitor which functions as the measuring capacitor, and the second sensor is designed as a temperature sensor which is immersed in the oil. A compensation device is included for correcting the measured value of the electric capacitance, taking into account a capacitance reference value measured on an auxiliary capacitor situated in proximity to the measuring capacitor. The corrected measured value of the electric capacitance and the temperature measured by the second sensor are used to determine an ageing state of the oil. Claims 6-13 depend directly or indirectly from independent claim 4.

Independent claim 14, as amended herein, recites a measuring system for determining a property of an oil from a dielectric property of the oil including a first sensor for measuring an electric capacitance and a second sensor for measuring a temperature. The first sensor is

designed as a dielectric sensor which is immersed in the oil and has a stray-field capacitor which functions as the measuring capacitor, and the second sensor is designed as a temperature sensor which is immersed in the oil. The first and second sensors are each connected to an analyzer device which assigns a value of the property to be determined to a measured temperature value and a measured electric capacitance value. The property to be determined includes an ageing state of the oil. The value of the electric capacitance measured by the dielectric sensor is compared in a comparator device of the analyzer device with a stored reference value assigned to the measured temperature value, and a signal is output as a function of whether the reference value is reached or exceeded. Claim 15 depends from independent claim 14.

Independent claim 18, as amended herein, recites a measuring device including a first sensor that measures a first property of an oil and outputs a first measured value and a second sensor that measures a second property of said oil and outputs a second measured value. An analyzer device is connected to said first and second sensors, wherein said analyzer device compares said first and second measured values with stored reference values and outputs at least one signal based on differentials between said measured values and said stored reference values. The at least one signal determines an ageing state of the oil. The first sensor is a capacitor having conductive feeder lines disposed on an insulating substrate.

Independent claim 19, as amended herein, recites a measuring device including a first sensor that measures a first property of an oil and outputs a first measured value and a second sensor that measures a second property of said oil and outputs a second measured value. An analyzer device is connected to said first and second sensors, wherein said analyzer device

compares said first and second measured values with stored reference values and outputs at least one signal based on differentials between said measured values and said stored reference values. The at least one signal determines an ageing state of the oil. A compensation device takes calibrating measurements of said first and second properties. Claims 17 and 20-22 depend directly or indirectly from independent claim 19.

The Balendonck reference discloses an intelligent dielectric sensor for measuring soil water content, electrical conductivity and temperature. As noted by Balendonck, since water is a polar molecule, and therefore has a high dielectric constant, water content is one of the major material properties that may be analyzed with dielectric measuring principles. (See page 1818, left col. of Balendonck). Balendonck discloses that the sensor incorporates an application specific integrated circuit to measure dielectric properties, a micro-processor and calibration data memory for determining soil water content and properties. (See Abstract, page 1822 of Balendonck.)

The Yasui reference discloses a fluid dielectric constant sensing device and method. The Office Action cites to Yasui as disclosing an electrode electrically connected to ground of a sensor circuit, both ends of a cylindrical coil being connected to a resonator circuit, an output of the resonator circuit being connected to an output circuit, and a temperature measuring circuit to execute temperature compensation.

Applicants' independent claims, as amended herein, recite measuring systems for determining a property of an oil, specifically an ageing state of an oil, from a dielectric property

of the oil. Applicants disclose that oils, in particular, are subject to an aging process which is influenced by high temperatures, among other things, and in which various chemical reactions take place that alter the quality of the particular oil. (See, for example, page 1, lines 16-18 of the English translation of the originally-filed specification). Applicants recite a system for determining the ageing state of the oil resulting from the aging process, from the dielectric property of the oil, including features multiple sensors and/or capacitors to provide measurements used in determining the ageing state of the oil. For example, the sensors may be connected to analyzer device which assigns a value of the property to be determined to a measured temperature value and a measured electric capacitance value, wherein the value of the electric capacitance measured by the dielectric sensor is compared with a stored reference value assigned to the measured temperature value, and a signal is output as a function of whether the reference value is reached or exceeded.

In contrast to the above, Balendonck discloses a dielectric sensor for measuring soil water content, electrical conductivity and temperature. Balendonck discloses application specific integrated circuitry for determining the soil water content and properties, and, as noted above, details the advantages using the technique on water due to water being a polar molecule. Applicants respectfully submit that Balendonck does not teach or fairly suggest the measurement systems and devices for determining an ageing state of an oil from a dielectric property of the oil, as recited by Applicants.

Further, Applicants respectfully submit that Yasui does not overcome the above-noted deficiencies of the Balendonck reference with respect to Applicants' present claims. The Office

Action recognizes on page 4 thereof that neither Balendonck nor Yasui disclose oil property measurement. The Office Action suggests, however, that Balendonck implies that dielectric measurements are useful in a broad range of environmental and industrial processes for on-line monitoring (citing to page 1818 of Balendonck) and suggests that since "oil also exhibits similar variable parameters as water," it would be obvious to one of ordinary skill in the art to apply Balendonck's process, modified by Yasui, to oil property measurement. Applicants respectfully traverse this conclusion for reasons as set forth below.

Applicants respectfully submit that the dielectric sensor disclosed by Balendonck, and modified by Yasui, for measuring soil water content, electrical conductivity and temperature in soil, does not teach or fairly suggest the measurements system recited by Applicants for determining ageing state of an oil from dielectric measurements thereof. Applicants respectfully submits that it not sufficient to simply suggest that Balendonck's disclosure, specific to water and directed to properties of water including soil water content, electrical conductivity and temperature, renders obvious Applicants' recited measurement system for determining an ageing state of oil, such as deep-frying fat. Applicants submit that determining soil water content, electrical conductivity and temperature, as disclosed in Balendonck, does not teach to one of ordinary skill in the art processes of determining properties from oil that may be used to determine an ageing state of the oil. Specifically, nothing in Balendonck nor Yasui refers to determination of an ageing state of any fluid, let alone oil.

Accordingly, Applicants respectfully submit that neither Balendonck nor Yasui, taken alone or in combination, teach or fairly suggest a measuring or sensor system for determining an

ageing state of an oil from a dielectric property of the oil having at least the above-noted features as claimed by Applicants. Accordingly, in view of the above, Applicants respectfully request that the rejections be reconsidered and withdrawn.

Further, Applicants have added new independent claim 27 and claims 28-40 depending therefrom, which correspond to granted claims of a counterpart European patent application, EP 1 466 170 B1. Applicants respectfully submit that the new claims are fully supported by the originally-filed specification and note specifically, for example, page 4, lines 22-28 of the English translation of the originally-filed specification concerning use of an auxiliary capacitor and compensation device having the specific recited features, and including at least the feature of an auxiliary capacitor whose capacitance changes on the basis of external influences in the same sense as the capacitance of the supply lines of the measurement capacitor, among other features as recited in the claim. Applicants respectfully submit that these claims are patentable over the cited prior art.

Based on the above, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 508-898-8603.

Respectfully submitted,
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